

TRADE SECRET

Study Title

Estimation of the Adsorption Coefficient (K_{oc}) of HFPO Dimer Acid Ammonium Salt on Soil and Sludge

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Performing Laboratories

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Study Number

DuPont-17568-1675

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GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

This study was conducted in compliance with U.S. EPA TSCA (40CFR Part 792) Good Laboratory Practices Standards, which are consistent with the EOCD Principles of Good Laboratory Practice (as revised in 1997), ENV/MC/CHEM (98)17, OECD, Paris, 1998, except for the item(s) documented below. The item(s) listed do(es) not impact the validity of the study.

Manufacturers' characterizations of the reference substances were not performed in compliance with the GLP standards.

Applicant/Sponsor

E. I. DuPont de Nemours and Company
Fluoroproducts Department
Wilmington, Delaware
U.S.A.

Study Director

Peter A. Bloxham, Ph.D.
Senior Research Chemist

11-SEP-2008

Date

Quality Assurance Statement

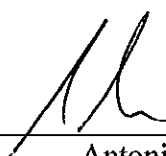
Work Request Number: 17568

Study Code Number: 1675

Key inspections for DuPont work request 17568, service code 1675 were completed by the Quality Assurance Unit of DuPont and the findings were submitted on the following dates.

<i>Phase Audited</i>	<i>Audit Dates</i>	<i>Date Reported to Study Director</i>	<i>Date Reported to Management</i>
Protocol:	16 July 2008	16 July 2008	16 July 2008
Conduct:	12 August 2008	12 August 2008	12 August 2008
Report/Records:	11 September 2008	11 September 2008	11 September 2008

Reported by:



Antonio Pedulla

Quality Assurance Auditor

11 Sep 08
Date

CERTIFICATION

Estimation of the Adsorption Coefficient (K_{oc}) of HFPO Dimer Acid Ammonium Salt on Soil and Sludge

We, the undersigned, declare that the work described in this report was performed under our supervision, and that this report provides an accurate record of the procedures and results.

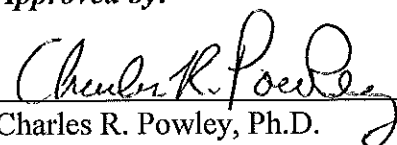
Report by:



Peter A. Bloxham, Ph.D.
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Senior Research Chemist

11-SEP-2008
Date

Approved by:



Charles R. Powley, Ph.D.
Manager, Regulatory Analytical Chemistry

11-Sep-2008
Date

Sponsor:

E. I. DuPont de Nemours and Company
Fluoroproducts Department
Wilmington, Delaware 19880
U.S.A.

PROJECT PERSONNEL

The following personnel from DuPont were associated with various phases of the study:

NAME	TITLE
Peter A. Bloxham	Senior Research Chemist
Scott M. Krenzel	Associate Scientist

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1.0 SUMMARY

Estimates of the adsorption coefficient (K_{oc}) for HFPO dimer acid ammonium salt on soil and sludge were established employing methodology described in the OECD Guidelines 121: Estimation of the Adsorption Coefficient (K_{oc}) on Soil and Sewerage Sludge using High Performance Liquid Chromatography. The results of the determinations are summarized as follows:

TEST NAME	TEST SUBSTANCE	RESULT
Estimation of Adsorption Coefficient (K_{oc}) by HPLC	Test Substance: H-28397	Soil Log K_{oc} = 1.08 K_{oc} = 12.0
	HFPO dimer acid ammonium salt Lot: E-113181-19-B	Sludge: Log K_{oc} = 1.10 K_{oc} = 12.6

2.0 INTRODUCTION

This report details the results for the analyses estimation of the adsorption coefficient (K_{oc}) for HFPO dimer acid ammonium salt on soil and sludge.

The study followed the analytical timetable listed below:

Study Initiation Date:	Jul 31, 2008
Analytical Start Date:	Aug 1, 2008
Analytical Termination Date:	Aug 12, 2008
Study Completion Date:	Sep 11, 2008

3.0 TEST SUBSTANCES (ITEMS)

The test substance:

H-28397 (HFPO Dimer Acid Ammonium Salt) Lot: E-113181-19-B

The test substances were manufactured by E. I. du Pont de Nemours and Company in 2008.

Reference substances selected for use in the study are listed in Table 1. Reference substances were selected based on commercial availability and availability of established K_{oc} values. Selected reference compounds exhibit a wide range of individual adsorption coefficients on soil and sludge.

Table 1: Reference Standards for the Determination of Adsorption Coefficients on Soil and Sludge

Reference Substance	Source
Acetanilide (CAS# 103-84-4)	Chem Service Inc. Lot: 368-127B
Aniline (CAS# 62-53-3)	Sigma-Aldrich Lot: 06020CH
Benzamide (CAS# 55-21-0)	Aldrich Chemical Co. Lot: 10918LE
Benzoic acid phenyl ester (CAS# 93-99-2)	TCI America Lot: OGF01
2,5-Dichloroaniline (CAS# 95-82-9)	Sigma-Aldrich Lot: 08502CH
4-Nitrobenzamide (CAS# 619-80-7)	Sigma-Aldrich 13709CC
Phenanthrene (CAS# 85-01-8)	MP Biomedicals Lot: 3191J
Urea (CAS# 57-13-6)	EMD Chemicals Lot: 1553B73

4.0 EXPERIMENTAL PROCEDURES AND RESULTS

4.1 *Liquid Chromatography/UV Spectroscopy*

4.1.1 *Sample Preparation and Analysis*

Reference stock solutions were prepared by weighing the following amounts of each reference substance into individual 10-mL volumetric flasks and diluting to volume with methanol.

Reference Substance	Weight (mg)
Acetanilide	30.2
Aniline	28.3
Benzamide	28.9
Benzoic acid phenyl ester	236
2,5-Dichloroaniline	21.0
4-Nitrobenzamide	23.5
Phenanthrene	135
Urea	55.0

The stock solutions were sonicated as necessary to dissolve the reference substances. Three combined calibration solutions were prepared by transferring aliquots from each of the reference stock solutions in three 10-mL volumetric flasks (labeled Standard #1, Standard #2, and Standard #3), as follows:

Reference Substance	Standard #1	Standard #2	Standard #3
Acetanilide	33.4 μ L		
Aniline	—	35.3 μ L	
Benzamide	—		34.6 μ L
Benzoic acid phenyl ester	8.50 μ L		
2,5-Dichloroaniline	—	47.6 μ L	
4-Nitrobenzamide	—		21.4 μ L
Phenanthrene	—	7.50 μ L	
Urea	2190 μ L		

Standard solutions were diluted to volume with 55%/45% methanol/water. Segregation of reference substances was determined to avoid potential retention time overlap. Aliquote size was determined to control peak height.

The test substance was prepared by weighing 38.9 mg of the test substance into a 10-mL volumetric flask and diluting to volume with 55%/45% methanol/water. The calibration standards and sample preparations were analyzed in triplicate by liquid chromatography with ultraviolet spectroscopic detection. Details of the instrumental conditions and method used can be found in the study records.

4.1.2 Results

Average retention time values for the reference substances and the test substance were used to calculate k' values employing urea as a void volume marker. A calibration curve was constructed for the determination of K_{oc} on soil by plotting experimental $\log k'$ values versus reference $\log K_{oc}$ values on soil for each reference substance (excluding urea) and calculating the linear least squares equation for the data. Similarly, a second calibration curve was constructed for K_{oc} on sludge employing reference $\log K_{oc}$ values on sludge. Calculation of estimated K_{oc} values for the test substance on soil and sludge was performed employing the slope and intercept values from the appropriate calibration curve.

The results of the analyses are presented in Table 2.

Table 2: Estimated Adsorption Coefficients for HFPO Dimer Acid Ammonium Salt on Soil and Sludge

Test Substance	Log K _{oc}		K _{oc}	
	Soil	Sludge	Soil	Sludge
H-28397	1.08	1.10	12.0	12.6

5.0 RETENTION OF DATA AND SAMPLES

Originals of all raw data and study documentation will be archived by the sponsor. Exact copies of pertinent raw data will be retained at:

E. I. du Pont de Nemours and Company
DuPont Haskell Global Centers for Health and Environmental Sciences
Stine-Haskell Research Center
Newark, Delaware 19714
U.S.A.

Remaining test substance will be retained at the DuPont Haskell Global Centers for Health and Environmental Sciences for use in additional studies.